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Associate Laboratory Director's Cost and Schedule Status Review of the sPHENIX Project

Charge to the Review Committee
August 5, 2014

The sPHENIX detector, currently under development, is designed to facilitate large acceptance, ultra-high rate measurements of fully reconstructed jets and high resolution spectroscopy of upsilon states at the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory (BNL). The experiment is being proposed with an eye toward enhancing the physics reach afforded by the RHIC complex prior to the possible construction of an Electron Ion Collider (EIC), which is currently under consideration by both the nuclear physics community and the Office of Nuclear Physics (ONP) in the Department of Energy. A review of the sPHENIX science program conducted by ONP in April 2015 resulted in a strong endorsement of the physics capabilities enabled by such a detector.

This review is being undertaken in order to provide an independent evaluation of the maturity and status of the sPHENIX project plan, which will inform Laboratory and ONP program planning. The committee is being asked to assess the current plan, focusing primarily on the cost and schedule, and taking into consideration the pre-conceptual stage of the planning and design. The project is currently planning to begin construction in CY2018. In the event that deficiencies are identified in the project plan, the committee is asked, to the extent possible, to recommend or outline a corrective path forward that is consistent with such a target.

The review will include an examination of the following specific items:

1. Design: Do the technical designs as described in the Pre-Conceptual Design Report (PCDR) adequately address the scientific goals and requirements? Is the pre-conceptual design sound, and does it provide an adequate basis for establishing the project's technical performance requirements efficiently and effectively, given the current stage of the project? Have the technical design choices been adequately justified? Have design alternatives, and any design decisions still in process, been adequately identified and integrated into the project plan, including decision branch points? Do the PCDR and supporting documentation adequately justify the stated preliminary cost range and project duration at this stage?

2. Scope: Are the project's scope and specifications sufficiently defined to support the preliminary cost and schedule estimates? If not, where are improvements called for, and what additional time and effort will be required to bring these to resolution?

3. Cost and Schedule: Are the preliminary cost and schedule estimates credible and realistic for this stage of the project? Do the estimates include adequate scope, cost and schedule

contingency? Does the contingency adequately bound the design alternatives being considered, or that are still outstanding?

4. Risk: Have risks been adequately identified for this stage in the project? Have they been adequately taken into consideration in the determination of the preliminary cost and schedule contingency?

5. Management and ES&H: Is the project being appropriately managed at this stage? Does the proposed project team have adequate strength, management experience, design skills and Laboratory support to produce a credible technical, cost and schedule baseline on the time scales under consideration? If not, which specific areas need to be addressed or strengthened? Are ES&H aspects being properly addressed, and are future plans sufficient given the project's current stage of development?

6. Documentation: Is the documentation currently in place adequate to support the project plan being presented? If not, where are the deficiencies? Does the project team have an adequate plan for generating the required material for future reviews?

The review will take place on Monday and Tuesday, November 9-10, 2015, at BNL. A closeout will be presented to the Laboratory and the project team at the end of the second day. It is requested that the committee submit its final report to me by Friday, November 20.

I very much appreciate your willingness to lend your time and expertise to this highly significant step in the sPHENIX review process, and look forward to receiving your assessment.

Sincerely,

Berndt Mueller
Associate Laboratory Director for Nuclear and Particle Physics
Brookhaven National Laboratory